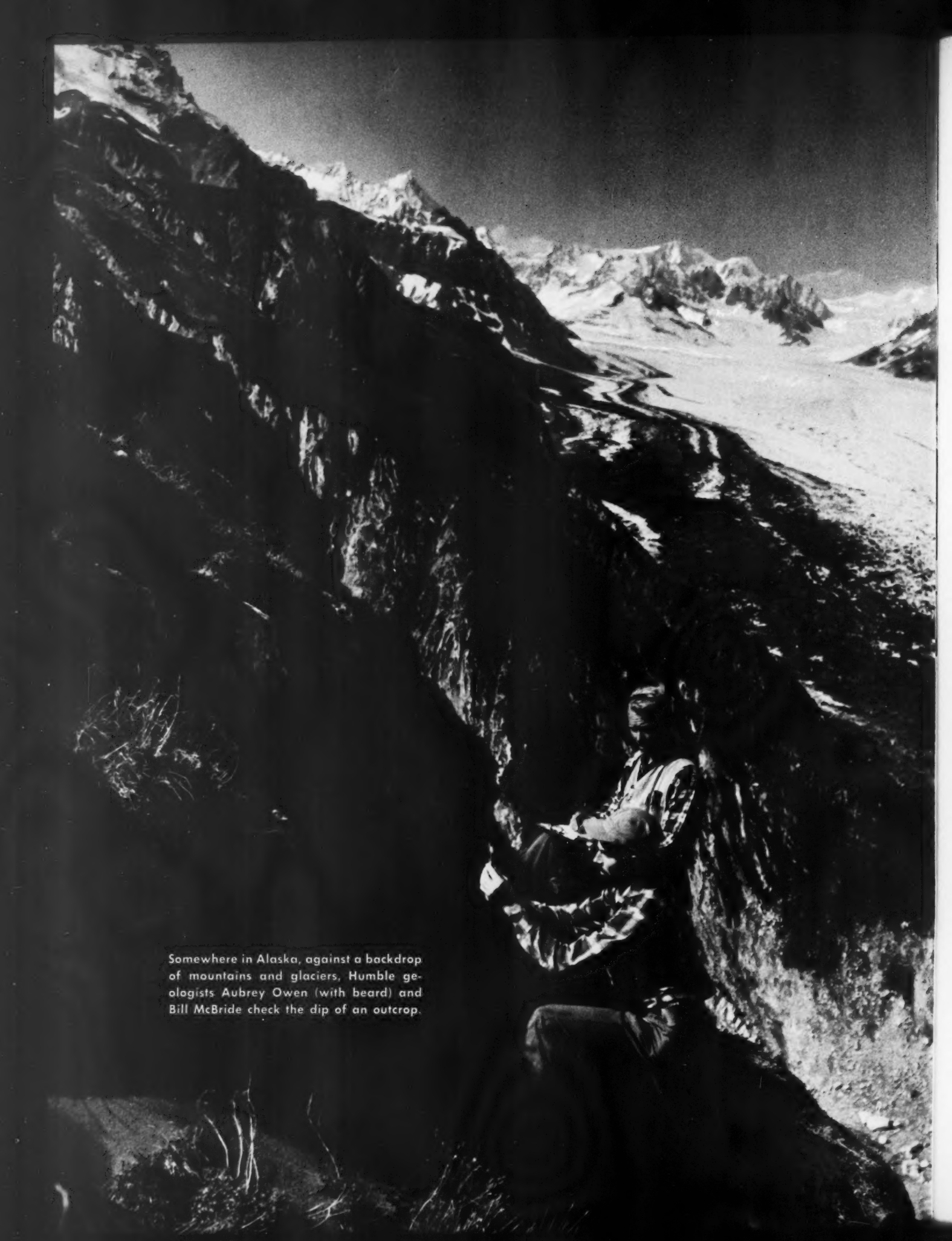
Autumn in Central Texas — *Porfirio Salinas*

The Humble Way

SEPTEMBER-OCTOBER, 1958



Somewhere in Alaska, against a backdrop of mountains and glaciers, Humble geologists Aubrey Owen (with beard) and Bill McBride check the dip of an outcrop.

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NEW TYPE TRIPLE COMPLETION

USING new completion techniques, Humble has successfully accomplished the oil industry's first tubingless triple completion.

In less technical language, this simply means that three different streams of oil from three separate underground reservoirs are being brought to the surface through three separate casing strings set in a single well bore, and without the necessity of installing the long strings of tubing customarily used for that purpose. The well is located in the Raccoon Bend Field, some 60 miles northwest of Houston.

There have, of course, been prior triple completions. There have also been other tubingless completions. But never before had anybody worked out the techniques necessary to make a tubingless triple completion. It is these unusual techniques that are important in Humble's constant efforts to reduce the high cost of oil production.

In most multiple completions, the operators set a string of large-diameter casing all the way down the hole, and do all the remaining work inside that casing. They isolate the productive reservoirs by means of packers, perforate the casing at the desired points, and produce the oil from the different reservoirs through separate strings of tubing.

In the Raccoon Bend well, however, Humble used no large-diameter casing (except the required surface casing), and no packers. Instead, three parallel strings of small-diameter (2⅞-inch) casing were clamped together, lowered simultaneously into the open hole, and cemented into place. Then, each casing string opposite a productive reservoir was individually perforated, permitting the oil to flow to the surface through the casing itself.

Simple as it sounds, this revolutionary multiple completion technique has involved some rather tricky engineering problems. Take, for example, the matter of perforating opposite the upper reservoirs. A conventional wire line perforating gun is designed to shoot holes through the casing in all directions. But with three parallel strings of casing, how can you perforate one without at the same time perforating the others? That was one of the first problems the engineers had to solve before the method could be used.

Their solution was to develop, in cooperation with service companies, a means of aiming the perforating gun so that it would shoot only in a predetermined direction.

The next problem for the engineers, then, was to figure out some way to maintain the relative positions of the three strings of casing.

They decided that the best way to do this would be to clamp the three strings of pipe together in a fixed position before lowering them into the hole. The engineers succeeded in developing special clamps and techniques for making up and handling the triple strings of casing in "bundles."

As it works out in actual practice, the rig crew begins by starting the longest string of single casing into the hole, adding joints and lowering the growing string in the usual manner. At the proper point, a connecting shoe is inserted between two joints to serve as a footing for the second string of casing. The two strings are then lowered together. When the point is reached for the third string to be added, here again a shoe is inserted, and the third string of casing is made up and clamped into the bundle.

When the bundle of casings has been lowered to the predetermined depth, the remainder of the space inside the well bore is filled with cement, pumped

down through the longest pipe. Next, the three casings are perforated in their selected productive reservoirs. The result is, in effect, three separate producing wells, each with its own casing, each operating independently of the others, yet all contained within a single well bore.

The parallel casing method of completion used by Humble in the Raccoon Bend well also offers certain advantages over the more conventional methods. Workovers, for example, can be performed in any one of the three casings without interfering with the normal operations of the other two. If, for any reason, it should become advisable to install tubing later, there is plenty of room inside the casing to do it.

Although specific cost figures are not yet available on the Raccoon Bend well, some interesting conclusions can be drawn from more general statistics. It costs, on the average, about $50,000 to drill an oil well in the United States. Humble's experience with single wells indicates that a tubingless completion may save one-third of the cost of a conventional completion. Add to that the fact that any type of successful triple completion can save a significant portion of normal costs involved in drilling three single wells. Obviously, then, the economies of a tubingless triple completion will be significant to the oil industry.

Cemented into hole, three casings protrude above flange, ready for the Christmas tree.

Simplified cutaway drawing shows how three strings of casing are situated in hole.

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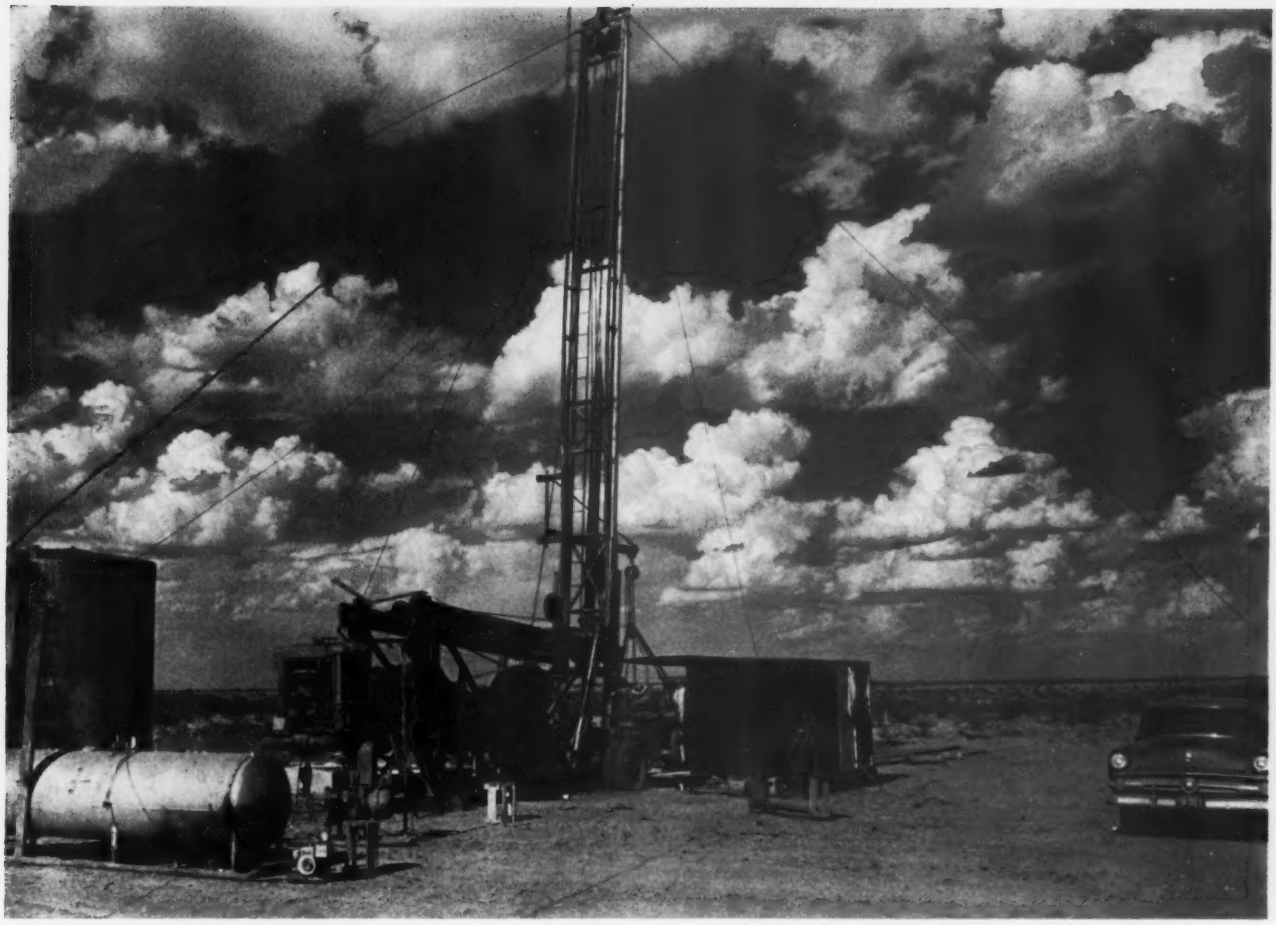


Cable tool rig punches out a hole in West Texas plain. Although this type of drilling has been largely displaced by more powerful rotary equipment, the cable tool method is still used to advantage in some types of formations, especially where wells are relatively shallow.

They Still Drill With Cable Tools

THE cable tool rig seen here punching its bit into the flat West Texas plain some 25 miles south of Big Spring, is remarkably similar in principle to the crude rig used by Colonel Drake nearly a hundred years ago to drill America's first successful oil well.

If this seems to be an anachronism, it is only because rotary drilling has been getting a lion's share of the public's attention for more than half a century.

For four decades after the Drake discovery all wells were drilled by the ancient method of weighting a sharp instrument, lifting it up and then dropping it, thereby letting the cutting edge dig into the earth. That is the cable tool principle. But the famous Spindletop discovery, in 1901, was drilled by a new method known as rotary drilling. Here the cutting bit was attached to a pipe and the pipe rotated by means of a turntable.

Because the rotary drilling rig proved faster, more powerful, and more versatile than the older method, the oil industry, since Spindletop, has concentrated on improving the equipment and techniques of rotary drilling. Cable tool equipment has been improved, too, but in the main oil men have hitched the future of their industry to the more powerful rotary.

Yet, even in these days of high speed rotary drilling and giant heavy-duty rotary rigs capable of drilling to depths of five miles, the old method of cable tool drilling still goes on. Last year, about 13.5 percent of all wells drilled in the U. S. were drilled with cable tools.

The cable tool has its limitations, of course. It can't reach the great depths achieved by its more powerful rotary cousin, and it digs its hole at a slower pace. But in some types of formations, and at the shallower depths, the pounding punch of the cable tool proves more economical and practical than rotary drilling.

Such is the area in West Texas where the picture above was made. Here, in the past two years, Humble has completed 16 wells at an average depth of around 1,500 feet, all drilled by a contract crew using cable tools.

At Bear Creek, Morgan J. Davis (left) and District Superintendent Joe Homer inspect the site of Humble's first Alaskan wildcat.

Alaska's New Horizon

Our largest state, most observers agree, offers bright prospects for significant discoveries of petroleum

IN size, the new state of Alaska stands head and shoulders above the rest of the nation. Is the day coming when it will also vie for top rank in the field of petroleum?

This was the question posed by Morgan J. Davis in a recent speech before the Anchorage Chamber of Commerce, and it was one to which Humble's president gave a contingent but generally optimistic answer.

Of Alaska's economic horizons, he said, one that looms especially large is the relatively unexplored sector encompassing the state's resources of oil and gas. Geologically, most observers agree, Seward's erstwhile folly offers bright prospects for significant discoveries of petroleum.

But Mr. Davis added this important proviso: Before Alaska can expect to win a place as a major oil-producing state, it must attract a great deal more exploratory drilling.

"In this vital respect," he reminded his Alaskan audience, "you are still a tenderfoot—still a *cheechako*. Up through last year, this vast area had been probed by little more than 100 exploratory wells. In the Gulf Coast area, there are more than three times that many wildcats drilled in a single month."

One reason for the lag in Alaskan drilling, he said, is that operations in the Far North involve considerably more in the way of preparation, equipment, and risk capital than is usually associated with exploratory ventures. (For examples, see the next three pages.) But he went on to say that if Alaska proves to be real "oil country," the industry will find a way to surmount the area's natural difficulties, such as severe weather.

An Alaskan oil strike, however, is likely to bear little resemblance to the bonanzas of gold rush days. From the start, Humble realized that any sizeable undertaking in Alaska would be in the nature of a high-cost and long-range project.

"We did not expect then, nor can we foresee now, an early return on our investment," Mr. Davis said. "Our company's policy, however, has never dictated that we enter into an area such as Alaska on a short-term basis, nor that we pull out if our first ventures prove unsuccessful."

Will statehood accelerate the growth of Alaska's budding oil industry? In the opinion of Humble's president, it can and should. The new state has the opportunity, for example, to enact conservation laws that will not only prevent waste but also encourage the use of the most advanced technology.

"The result," Mr. Davis said, "will be a powerful inducement for companies to invest their capital, to create new jobs, and to help build a much stronger economy in this great land."

In Anchorage, at the annual dinner of the Chamber of Commerce, a capacity crowd of 325 heard Humble's president discuss Alaska's prospects for becoming a major oil-producing state.

SURFACE GEOLOGY: AN AIRBORNE OPERATION

TO the bears of Alaska, according to one bit of native folklore, should go the credit for discovering the territory's first oil. Long before sourdoughs or geologists appeared on the scene. the story goes, ailing bruins had found and were using a number of oil seeps as the source of their favorite physic.

In recent years, however, the "rockhounds" of the petroleum industry have taken up where the bears left off.

This past summer, for instance, there were more than 50 helicopters flying the Alaskan bush for various oil companies. (Humble alone had 10 in operation.) And a large part of this whirlybird fleet was assigned to the surface geologists—to men engaged in a far-ranging search, not just for oil seeps, but for the formation outcrops which sometimes point the way to possible underground reservoirs.

Traditionally, surface geology ranks as one of the least expensive methods of hunting for oil. But not in Alaska.

The bush country—a roadless domain of mountains, glaciers, and untamed wilderness—poses some major problems in planning and logistics. Aerial transportation of one kind or another becomes a virtual necessity. Base camps must be set up and staffed with supporting personnel. And because winter brings a halt to effective surface work, the rock-chipping and note-taking must go on seven days a week if the best possible use is to be made of a short summer.

THIS year marked the fifth straight summer that Humble has carried out reconnaissance and surface mapping in various parts of Alaska.

Two of the Company's exploration parties roamed the forests and foothills south of the Alaska Range. Toward the end of the season, they joined forces at Beluga Lake, a spot of rare and undisturbed beauty at the foot of Triumvirate Glacier. The territory covered during their four months of geological scouting took in some 20,000 square miles—an area about half the size of Kentucky.

A third team confined its exploratory activities to a part of the Yukon basin.

Throughout the summer, Humble's field men lived and worked amid some of the world's most spectacular scenery. Glaciers provided the ice to refrigerate their caches of meat. The northern lights sometimes disrupted their radio contact with the outside world. There was even an occasional brush with adventure—such as the time, for example, when one party awoke to find a swollen river invading its camp. (All hands were safely evacuated by helicopter.)

What about the bears? They generally kept their distance, and Humble's busy geologists were glad to do the same.

At summer's end, two of Humble's surface geology parties were working out of this base camp on Beluga Lake. The tents are those used earlier at Bear Creek.

The versatile whirlybird—in this case, a three-place version—enabled Humble's geologists to reach and study isolated areas where few men had ever been before.

Mail call at Beluga Lake: This amphibious Super-Widgeon made periodic flights to the geologists' camp, usually with a cargo of mail or fresh food.

Like a giant mechanical stork, this helicopter carries bundles of seismic equipment and supplies from location to location. Here, the crew has just completed a dip-shooting operation in a muskeg-covered clearing, and everything is being moved to another site.

Seismic Work Comes High In The Bush

FOR several weeks now, in a wild and trackless region north of the Cook Inlet, Humble has been carrying on its first seismograph operation in Alaska.

Seismic work, like the other methods used to prospect for oil, comes high in the bush country.

In this land of few roads and many natural barriers, where even a moose can find the going rough, getting men and equipment to and from the working area is no simple matter. The only practical solution may be the expensive one of an airlift by helicopter. If so, "shooting" a location may cost two to three times more than a similar project along the Texas Gulf Coast.

Humble's seismic activities are being conducted out of a base camp at Willow, a small trading post north of Anchorage on the Alaska Railroad. Taking part in the operation, which will continue through the winter, are two Company geophysicists, a 13-man party working on contract, and a five-man helicopter crew. Their present assignment: a sprawling river valley studded with spruce and carpeted with muskeg.

Here, for the first time on a Humble seismograph job, giant helicopters are being used as the only prime movers. Hovering low, a helicopter hooks on to the 2300-pound drilling unit, lifts it into the air, and leapfrogs it over the treetops to the next location. A 2700-pound recording cab is whisked from spot to spot with similar ease. In this way, the seismograph crew is able to shoot about four locations a day.

Beside the recording cab, the operators examine their record to make sure another shot is not needed before moving on to the next location.

The shooting over, two crewmen plod across the muskeg—spongy ground choked with plants—to collect the geophones and the cable.

Weather Presents Major Problems At Bear Creek

THEY tell the story in Anchorage of the geologist who, some years ago, wanted to map the Bear Creek area of the Alaska Peninsula. He ran into one difficulty. Cold weather was coming on, and he could enlist no help at all among the natives. They contended that here was one spot in Alaska which, during winter, was completely unfit for human habitation.

Having run the gamut of seasons at Bear Creek, the men working on Humble's first Alaskan wildcat can understand how such an idea might have arisen. They have found that this bleak and desolate area does indeed present problems aplenty. But they have also learned that in spite of the harsh conditions laid down by climate and geography, drilling for oil in the Alaskan hinterland is entirely feasible on an around-the-calendar basis.

The Bear Creek test, it is true, has had tough sledding. The well was spudded in on Sept. 23, 1957. Exactly a year later, it had reached a depth of only 12,062 feet—considerably short of its projected goal of 12,500 feet and still a question mark as to ultimate results. But this slow going was mainly due, not to weather or remoteness of location, but to one of those long and costly fishing jobs which sometimes turn up to plague a drilling crew.

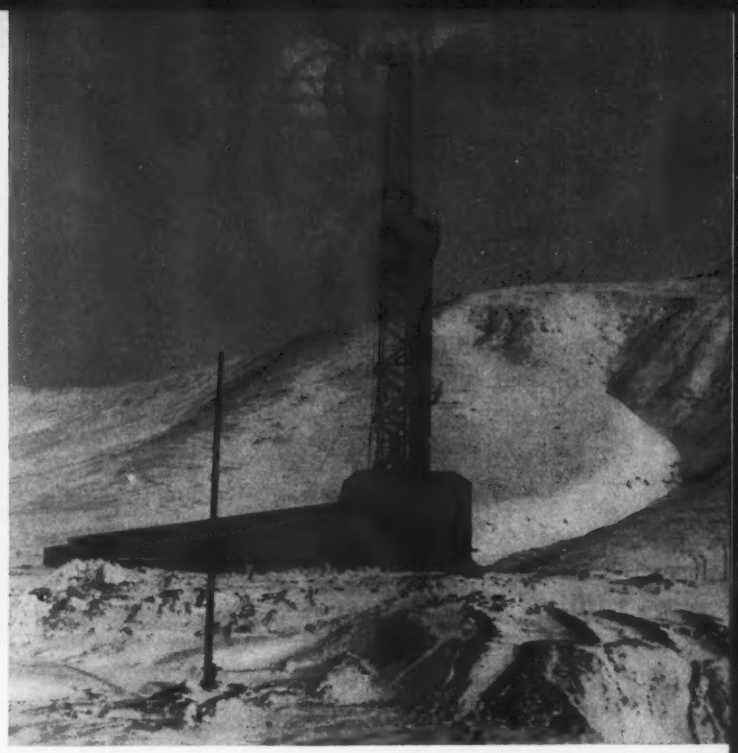
This one started last April when a string of 21 drill collars was lost in the hole. Five weeks of fishing netted all but one of the massive joints, but the bottom collar could not be budged. The crew then tried to sidetrack, or drill around, the stuck tool. Seventeen whipstocks were set to guide the drilling bit, but each time the bit veered off at too great an angle or else came back into the hole. A turbodrill, flown in by helicopter, finally turned the trick—exactly 16 frustrating weeks after the unfortunate mishap with the drill collars.

Not a minute of rig time, however, was lost during the first year of drilling as a result of mechanical trouble. And less than 100 hours were lost because of the winter weather.

THE weather, nevertheless, has proved to be a formidable adversary at Bear Creek. Take the winds, for example. During the first 175 days of drilling, the Humble camp was buffeted on 31 separate occasions by gales in excess of 75 miles an hour. On 11 of these days, the wind velocity reached 100 miles an hour or more—how much more, it is impossible to say. At that point, more than once, the arm on the recording device swept completely off the chart.

There was one unforgettable day in December when a 96-mile wind caught the rig's quonset-type mud house with an especially powerful gust. The mud house left its foundations and sailed into the air like a loose balloon. It soared over the 142-foot derrick, reached an altitude of about 200 feet, and finally crashed in a valley a short distance away.

Humble's rig at Bear Creek was designed, however, with that kind of weather in mind. It is of extra-heavy construction, and most of the working areas are enclosed and heated. The drilling crew has even been able to make round trips during gales of 75 to 80 miles an hour. But the wind had to be coming from the north or south. If out of the east or west, it blew the traveling block beyond the derrick man's reach.



Last winter, snow-covered tundra formed a bleak background for Humble's drilling rig at Bear Creek on the Alaskan Peninsula.

There is one good thing, say the crewmen, about these williwaws: The mosquitoes can't take the wind, so they give the area a wide berth.

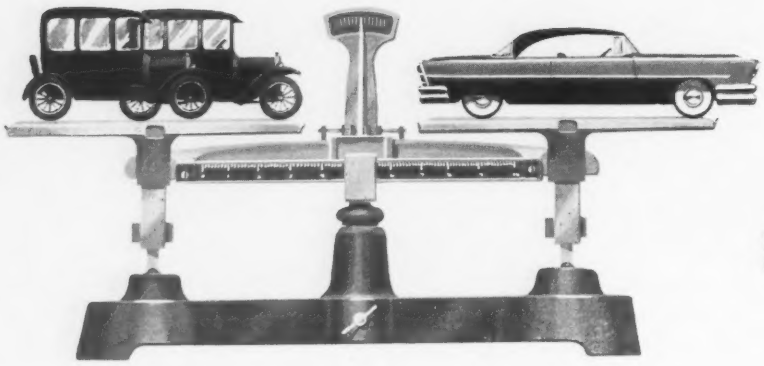
Bear Creek has also received more than its share of rain and cold. Nearly 28 inches of rain fell in one 16-day period, and once during the winter the temperature dipped to 22 degrees below zero.

Temperature readings, however, do not tell the whole story. In the Far North, you must also take into account a "chill factor." According to the Air Force, one knot of wind can be the equivalent of a drop in temperature of one degree. There were days, then, when the men at Bear Creek saw the mercury approach the equivalent of 100 degrees below zero.

During most of the past year, there have been 42 to 45 men working in the camp and on the well at Bear Creek. Living in specially built trailer houses, they took the worst that Alaska's climate has to offer and rode out the winter in fine shape. *Cheechakos* (or newcomers) only a year ago, they now rank among the "sourdoughs" of Alaska's growing petroleum industry.

At Bear Creek, Geologist Marvin Rushing (right) shows cuttings to Humble's president (center) and Regional Geologist Fred Sollars.

Ton-miles, rather than miles-per-gallon



Most of today's automobiles weigh twice as much as their counterparts of 30 years ago.

THE typical American motorist is more aware of changes and improvements in automobiles in recent years than he is of the pronounced quality improvements in gasoline. There are two reasons for this: (1) he cannot see gasoline quality like he can car styling, color, and safety improvements; (2) he continues to evaluate gasoline quality and performance with the old miles-per-gallon yardstick.

A more realistic appraisal of gasoline quality is possible with a new approach known as "ton-miles per gallon." As the name implies, this is the distance—the number of miles—that one gallon of gasoline can move a ton of automobile.

The ton-miles evaluation system makes allowances, as it should, for differences in weight between various makes and models of contemporary automobiles. It allows also for the great weight increases that have occurred over the years since American motorists have demanded larger, heavier, and more luxurious cars.

For example, the Model T Ford of the 1920s weighed less than 1,700 pounds; its 1958 counterpart weighs twice that much—3,400 pounds. Even among the various 1958 models there are wide variations in weight. This is why a standard such as the ton-miles per gallon is much more realistic than the old miles-per-gallon in measuring realistically the performance of today's gasoline and the improvements which have been made in your motor fuels.

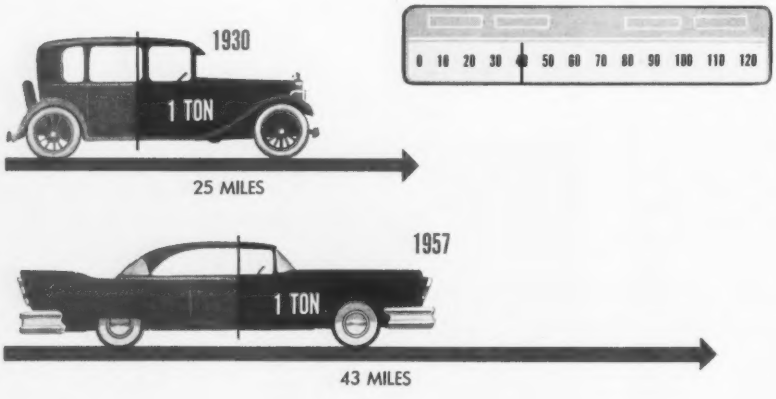
Old records show that, based on the average of all cars in use in 1930, one gallon of gasoline could move a ton of car 25 miles at a speed of 40 miles an hour. By 1957, one gallon of gasoline was moving a ton of car 43 miles at the same speed. That's a 70 per cent improvement! And all of that progress is a joint tribute to the automotive and petroleum industries.

This 70 per cent improvement is particularly impressive when considered in light of the fact that available horsepower of passenger cars has more than tripled since 1930; has more than doubled in the last 10 years.

Added to the skyrocketing increase in horsepower is the enormous power load demanded by convenience accessories on the new models—automatic transmission, power steering, power brakes, air conditioning, and super generators. Many of these features were not even available as recently as 10 years ago. Every one of them places more load on the power supply in the gasoline as surely as if each had its own little line to the gasoline tank.

But motorists apparently are not generally aware of the gasoline improvements which have made these advancements possible. Nor do they recognize the fact that the vastly better gasoline which provides the pronounced increase in power is being supplied to them at a very small increase in price.

A survey made by the Ethyl Cor-



At 40 miles per hour, a gallon of today's gasoline moves a ton of automobile 70 per cent farther than in 1930. These figures are based on an average of all cars in use at the time.

determine

TRUE GASOLINE PERFORMANCE

poration shows that 50 per cent of the motorists interviewed were not aware that any improvements had been made in gasoline quality over the last five years. And even more amazing was the impression held by 74 per cent of those interviewed that in the last year or two the price of gasoline had increased more than any other widely used item—except haircuts and hairdos.

Actual facts are: regular gasoline in 1930 had a research octane number of 63; today's regular gasoline averages 91 octane across the nation. That's an improvement of 28 octane numbers, and better octane rating is but one of several ways in which gasoline has been upgraded.

A study of gasoline prices for the same comparative years brings to light these facts: regular gasoline sold in 1930 at an average of 16.2 cents per gallon, plus an average tax of 3.8 cents a gallon. That makes a total average price of 20 cents a gallon at the service station pump.

Today, regular gasoline sells at an average price across the nation of about 22.2 cents plus tax. But the tax load is now 9 cents per gallon, making the average price at the pump about 31.2 cents. So, actually gasoline has gone up only six cents per gallon since 1930, *and taxes have gone up more than five cents a gallon.*

Relating price and performance back to the ton-mile yardstick you arrive at these revealing figures: excluding taxes, the gasoline to move a ton of automobile one mile in 1930 cost 66/100 of a cent. Today, the fuel cost to move a ton of car one mile is about 54/100 of a cent.

And even when you include the heavy tax load, you still pay less today to move a ton of automobile than you did in 1930. In 1930 the cost was 81/100 of a cent; today it is 76/100 of cent.

So, while the price of gasoline (leaving off taxes) has gone up 37 per cent since 1930, actual power output of today's improved fuel is up 70 per cent. This tremendous power increase has resulted from improved engines, increased octane rating, and other gasoline improvements. Without these improvements the average motorist today would have to buy about 475 gallons more gasoline than he now does to get his power requirements. That's enough for a round-trip from Portland, Maine, to Portland, Oregon.

Hence, though the public is not fully aware of the facts, they are: the actual price increase for gasoline over the past 27 years is only 37 per cent; and the power output of gasoline resulting from continuous improvements is up 70 per cent over the same period.

You may still think about gasoline mileage in terms of miles-per-gallon. Actually you get a much more realistic picture of true performance of today's gasoline in your car if you measure it in terms of ton-miles.

Actual price of today's regular gasoline, excluding taxes, is only 37 per cent higher than in 1930, yet the power output of gasoline is now 70 per cent greater thanks to improvements.

As eyes and ears of petroleum industry, the scout goes about his task of finding out who is doing what, when, and where.

In this business, the scout is a roving reporter and . .

The Oil

SINCE the hectic days of the early Pennsylvania boom, scouting has occupied a unique niche among the interesting jobs of the oil industry. The scout deals in information, a valuable commodity to any company engaged in the risky business of hunting for oil.

The scout serves as the eyes and ears of his company in the geographical area assigned to him. It is his job to keep tab on every well drilled in his district, to know every move a competitor makes, and to note every sign of activity related to the oil industry. He is expected to see all, hear all, but tell as little as possible to anyone except his own boss.

It is not an easy job. Lease buyers, for example, are just as anxious to keep their activities secret as the scout is to learn about them. Geologists and geophysical exploration crews prefer that their work go unobserved. Sometimes even the staking and drilling of a wildcat well is shrouded in as much

Sidewalk smalltalk may result in scout obtaining information on big lease play.

Friendly store owners frequently relay tips about exploration efforts in area.

Coffee break on rig floor offers scout a chance to obtain facts on well's progress.

Well cuttings analyzed in field laboratory help determine drilling progress of well.

l Patch is His Beat

secrecy as the operator can manage. Oil hunting in all its phases is a highly competitive business.

A good scout, however, will find a way to obtain the information he needs about any significant activities. What he can't observe for himself he is likely to learn about in conversations with friends and acquaintances throughout his district. For the typical scout is an amiable fellow who makes friends easily. He is an expert conversationalist, a practical psychologist, and a meticulous reporter.

Humble today employs 71 such men as scouts in 12 states, including Alaska, from Tallahassee to Anchorage. In the routine performance of his job, each of these scouts may drive 25,000 to 45,000 miles each year and keep tab on an average of 200 wells.

How does a scout's information help Humble? There are many ways.

Some time ago in Central Texas, for example, a Humble scout happened to be on the site when a newly completed oil well suddenly began to produce water. He immediately contacted his boss and Humble cancelled a $100,000 buying order for leases.

On another occasion in the Gulf Coast, a Humble scout discovered that a wildcat well had an oil show. The Company, as a result of this advance information, was able to purchase more adjacent acreage at substantially less money than its competitors.

Alert scouting, in fact, has been instrumental in Humble's acquiring acreage in several big oil fields—including Thompsons and Conroe.

Methods used by a Humble scout to obtain information vary with the situation. Many of the routine facts and figures he gets by simply going to the rigs, courthouses, or other information sources and asking for them. Likewise, he garners much data via the district "scout check," a voluntary association of oil industry scouts oper-

Scout obtains lease records by going to courthouses and copying latest entries.

By sniffing cuttings, a scout often can determine if an oil show has been made on a well. Sometimes his nose proves more effective than his eyes in determining a wildcat's status.

Visiting with the driver of a dynamite truck on lonely country road, alert scout may discover that a rival company's seismograph crew is running shot patterns on a nearby ranch.

ating in each area. The idea for the check originated years ago at a time when each scout journeyed to every information source to obtain his facts. This naturally led to great duplication of work; and the scouts soon hit upon the idea of meeting once a week and sharing all of the routine information gathered by each scout in his assigned district.

OBTAINING non-routine information, though, demands different tactics. Here the Humble scout puts his own initiative, friendships, and geological knowledge to work. In his travels about the countryside, in his chats with farmers, ranchers, bankers, and brokers, he picks up many tips of a confidential nature. He might uncover a big lease play gathering steam in his district, discover a seismograph crew drilling shot holes on a ranch, or surface geologists hacking out rock samples from a creek bottom. Such non-routine information need not be turned in to the check—and seldom is.

Scouts usually pride themselves on accuracy as well as speed in rounding up such "dope." But not always. In one classic case, a big lease play in his area completely stumped a scout. For the life of him he couldn't find out who was acquiring the big blocks of land. Later, to his chagrin, he discovered it was his own company.

Another realm of non-routine information centers about "tight holes," wells on which the operator withholds all the facts. On some of these locations, the joke goes, "you couldn't even get a crew member to tell you the time of day."

When an operator or driller drops this veil of secrecy over a well, the scout must call into play his own ingenuity. Although he sometimes finds himself delayed in getting the information, he never draws a complete blank. Somehow, someway, the facts almost always find their way into his little black book.

A gregarious driller might let slip the depth of his well. A talkative service station operator may drop a clue about a new gravity meter crew that just rolled into town. A cowboy riding fence might tell about a cement truck he saw heading for a wildcat rig. Even the stock market flurry of an oil company's stock can help a Humble scout decipher a well's progress.

Scout check is a voluntary association of oil industry scouts operating in each area. Members usually meet once a week to exchange routine information on wells and leasing activities. Leader of the check, elected by participating members, is called the "bull scout."

It was the secrecy imposed on wildcat wells that gave birth to the profession of scouting. Soon after Colonel Drake made his famous discovery at Titusville, the price of oil turned skittish. New discoveries—or indeed even rumors of new discoveries—dropped the price, while dry holes or rumors thereof sent prices soaring. Some sly speculators capitalized on this business frailty by deliberately circulating false rumors and then reaping rewards on the resulting price swings.

To help combat this problem, some crude oil dealers began hiring men to sneak into oil fields and report on the wells as they were being drilled.

OFTEN these early-day scouts resorted to all sorts of skullduggery to get their information. Stories are still told about scouts who hid for days near rig floors, crept past armed guards to reach a well site, and even disguised themselves as supply salesmen. In a later period one scout became quite adept at obtaining information by listening against a telephone booth.

Fortunately, such drastic methods have now faded from the scouting scene. What the early-day scout got by stratagems, his present-day counterpart obtains by friendship, honest ingenuity, and cooperation. With his traditional conversational gambit "how deep are you?" today's scout climbs onto a drilling rig, chats with the crew members, and learns much of what he wants to know.

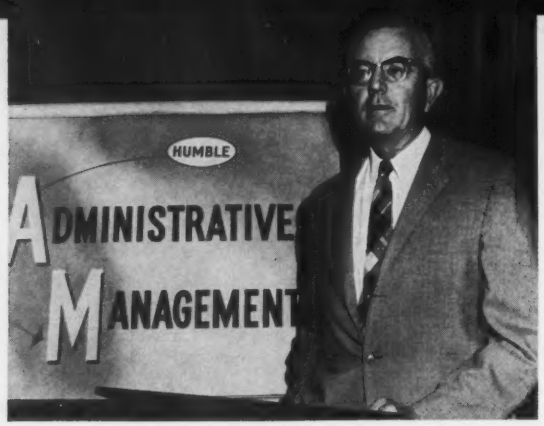
The scout has become a respected and trusted figure in the oil fields. He often stays on a rig for days at a time, sleeping in the geologist's dog house, drinking the black rig coffee, and taking a dip or two in the reserve water pit. During this time he leans over backward to offer a hand when needed. He may be asked for advice or help in analyzing cores, interpreting electric logs, working a paleo section in the geologist's field lab, or numerous other chores.

Although scouting has resolved into a highly ethical and scientific profession, competition for information remains as fierce as ever. In fact, scouts have been known to scout each other in an effort to pick up stray tips. As a result, all check carefully before relaying any really hot news for fear of a leak.

The life of a scout is not one of ease or convenience, despite improved transportation and communications. The Humble scout still carries mud chains, tow ropes, and extra gasoline in his car, because he never knows what to expect in his travels.

But the typical scout loves his work. He will look you straight in the eye and tell you he has the best job in the world.

A scout's work is never done. Returning to his office after a day in the field, rumor of an oil show on a new wildcat may send him scurrying back to the rig for more information.



Industrial relations specialist is Dr. A. Q. Sartain, chairman of personnel administration in the Southern Methodist University School of Business, and co-author of two books on human behavior. In first summer with Humble, he made a study of training and research procedures in the Company's Employee Relations Department.

Oldest professor and chairman of 1958 summer professors' group was E. E. Kimberly, a member of the Ohio State University faculty since 1924, and author of a textbook on the design of electric motors. He continued work on lease automation and electrical production equipment during his second summer with the Humble Company in Houston.

Economic studies were summer projects facing Dr. James W. McKie, left, and Dr. Stephen L. McDonald. Dr. McKie, associate professor of economics at Vanderbilt University, made a study of the future of the domestic oil industry. Dr. McDonald, associate professor and head of department of finance at Louisiana State University, studied crude oil pricing. It was the second summer for Dr. McKie; it was the first for Dr. McDonald, but he previously was a regular Humble employee.

Pierce Junction was home base for experiments of Dr. J. R. Sims, left, and P. D. Weiner. Dr. Sims is chairman of the civil engineering department at Rice Institute and is acting temporarily as Dean of Men. Mr. Weiner is a mechanical engineering professor at Texas A & M College. During past five summers, Dr. Sims has assisted with structural problems in offshore operations. Mr. Weiner continued experimental work for second summer on tubing and casing thread design.

Humble's

The growing partnership of education and industry is proving mutually beneficial

Geologic study in Alaska was project of Dr. Lowell R. Laudon, professor of geology at the University of Wisconsin. He helped a team of Humble surface geologists make a stratigraphic survey of the rugged Yukon basin in eastern Alaska, near the Canadian border. It was Dr. Laudon's first full summer in Alaska; he spent four previous summers with Humble in Washington, Oregon, and upper California.

Youngest professor was Dr. Albert K. Sparks, who began his teaching career at the University of Washington College of Fisheries this fall. During the summer, he assisted with an ecological survey of Houston ship channel and adjacent bays in the vicinity of Humble's Baytown Refinery.

Working on drainage problems of photogeology in his fourth summer with Humble's Exploration Department was Dr. Troy J. Laswell, an associate professor of geology at Louisiana Polytechnic Institute. His introductory geology textbook will be published in the near future.

Dr. DeWitt Reddick of the University of Texas just completed his fourth summer working with writers of Humble publications. Assistant dean of arts and sciences and acting director of School of Journalism at Texas, he is the author of two journalism textbooks and a frequent contributor of articles to various national magazines.

Dr. John Ryan is professor of marketing and head of the department at Texas Technological College. In his first summer with Humble, he studied and evaluated sales promotion and merchandising programs of the Marketing Department. Above, he interviews a service station manager in the field, where he spent six weeks of study.

Summer Consultants

EARLY in September, a group of 21 professors wound up their summer projects in seven Humble departments, packed their briefcases, and headed back to 13 college and university campuses across the country.

But not before they had gathered in an unusual meeting with members of Humble management to talk about their summer work, to appraise the oil industry, and to offer frank comments as a result of their experiences.

Hiring highly qualified educators for summer projects and consultant work is nothing new with Humble, although the "open exchange of ideas" session at summer's end was initiated only last year. The Company has employed professors as consultants for many years, and since 1950 it has had an organized program for securing the services of professors during the summer.

More and more in recent years, businessmen and professors have come to find this type of relation stimulating and worthwhile. Educators agree that schools cannot educate without having firm roots in their environment; businessmen say that industry can benefit from the advice of specialists in the academic world.

The growing partnership of industry and education is proving mutually beneficial, as Humble's summer professor program serves to illustrate. Through such programs, industry gains from the expert knowledge of the professors as well as from the infusion of new ideas and points of view. Education is strengthened as professors have an opportunity to broaden their experience as a background for teaching and counselling students.

For the 1958 summer months, *(Continued on next page)*

Drilling and production problems were subjects of study by C. V. Kirkpatrick, left, and F. W. Cole. Mr. Kirkpatrick is chairman of petroleum engineering department at University of Houston while Mr. Cole is professor of petroleum engineering at University of Oklahoma, and author of a textbook on drilling engineering. Mr. Kirkpatrick's project was artificial lift as applied to slim-hole and tubingless completions; Mr. Cole wrote a drilling engineering manual for the Company. It was the fourth summer for Mr. Kirkpatrick; the first for Mr. Cole, although he was a former regular Humble employee for six years.

Leland Barclay, professor in charge of surveying and photogrammetic engineering at the University of Texas, consulated with the Civil Engineering Division on surveying and mapping problems; it was his first summer with Humble. At Texas for 29 years, Mr. Barclay has written one surveying textbook, is at work on another.

Rice Institute professors who worked in Houston Research Center were Dr. Charles F. Squire, left, and Dr. James C. Wilhoit. Dr. Squire, a professor of physics, surveyed Humble experiments to drive oil out of the reservoir with light hydrocarbons. Dr. Wilhoit, an assistant professor of mechanical engineering, studied forces acting on individual chips on the bottom of the drill hole. It was the first summer for Dr. Squire, the second for Dr. Wilhoit.

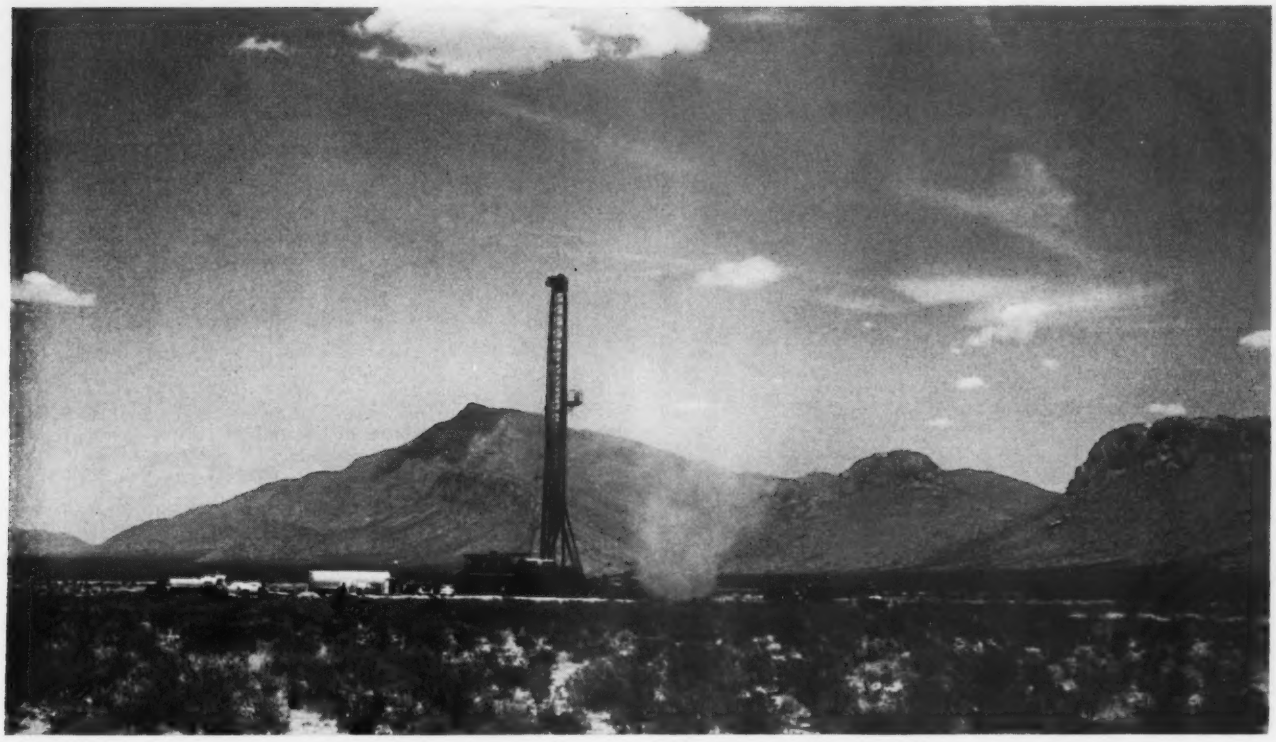
Two-man project of University of Houston professors was to extend types of problems that could be handled on Humble's complex computer equipment. Left, Dr. E. I. Organick, associate professor in chemical engineering and director of the University's Numerical Analysis Center; and Dr. Albert Newhouse, a German-born mathematics professor who has been in this country since 1937. It was the first summer with Humble for both.

In fifth summer with Production Department is Dr. E. W. Hough, professor of petroleum engineering at the University of Texas. Continuing work on well stimulation, he is assisted above by John Sauer, a summer employee and chemical engineering senior at the University of Texas.

(Continued from Page 15) Humble hired 21 professors representing colleges and universities in seven states. Thirteen worked in the Production Department—one in civil engineering, ten in petroleum engineering, and two in research. Two professors worked on economics, two in exploration, and one each in marketing, employee relations, public relations, and manufacturing.

These men are specialists who are well-known in the circles of scholarship. Among them are chairmen of departments, heads of schools, and the authors of many textbooks, papers, and pamphlets. More than half had worked with Humble in previous summers. Two of the professors—F. W. Cole of the University of Oklahoma, and Dr. Stephen L. McDonald of Louisiana State University—are former regular employees of the Company.

In the accompanying pictures, you will meet 19 of the 21 professors. Unavailable for photographs were Dr. C. F. Weinaug, chairman of the petroleum engineering department at the University of Kansas; and Dr. H. E. Rorschach, professor of physics at Rice Institute. Dr. Weinaug conducted experiments on the compressibility of rich gas mixtures; Dr. Rorschach's summer was devoted to the development of an improved foghorn for use in offshore operations. It was the second summer for both.



Jackknife derrick stands tall above the desert sands as a whirlwind playfully whips up dust nearby. Hatchet Mountains in background are an obstacle to radio communications between this remote wildcat site and Deming, New Mexico, the nearest town, which is 93 miles distant.

LONESOME WILDCAT

DEEP in the desolate desert of southwestern New Mexico, 93 miles from the nearest town, a drilling crew with a jackknife rig patiently probes beneath the earth's crust in hope of finding new oil to add to the nation's reserves.

This is Humble's New Mexico State —B.A. No. 1, a rank wildcat being drilled by a contract crew in one of the most remote areas of the southwest. Whether it will turn out to be a new discovery or just another dry hole remains to be seen. But win or lose, the venture demonstrates some of the reasons why oil hunting is not the easy-profit business some people believe it to be.

The site is more than 20 miles from pavement, and before any equipment could be moved in, seven miles of caliche access road had to be built across the sand. Thousands of ton-miles of transportation were involved in just getting ready to drill. Every item of equipment, materials, and other supplies had to be hauled the 93 miles from Deming—except water for the drilling mud. This was obtained by drilling a water well on the site.

Finally, the test well was spudded in. Right away, troubles began. Not far beneath the surface the drilling bit dropped into a cavern, and hundreds of pounds of expensive drilling mud gushed into the void, never to return. But that was only the beginning: throughout the next 1,200 feet of depth the drill found many more caverns. No more drilling mud was lost, however, because the drillers switched to water instead of mud through the remainder of the cavernous zone.

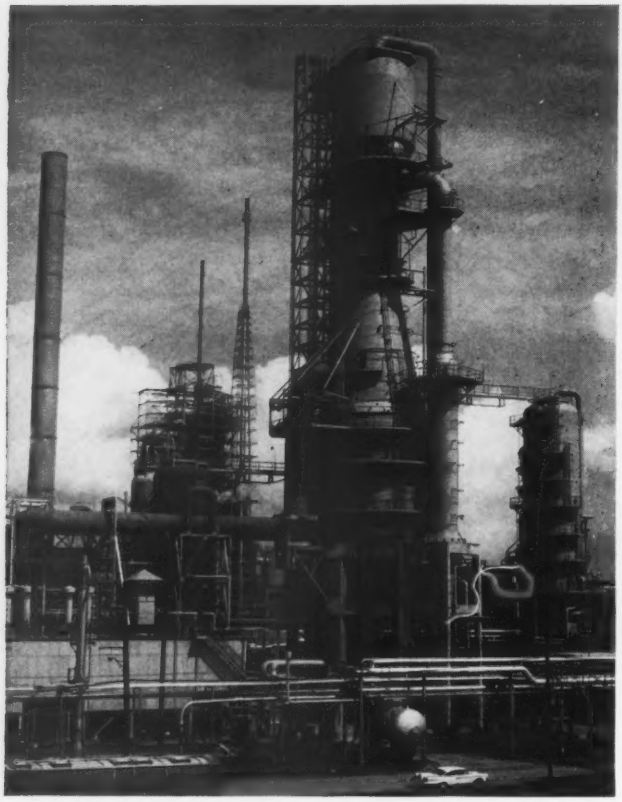
Even that was not as simple as it sounds. To get enough water, a second water well had to be drilled, and two large steel tanks were trucked in for use as reservoirs. But the wells wouldn't produce water fast enough to keep the tanks full and the crew had to resort to stop-and-go tactics. They would drill until the tanks ran dry, then stop and wait for the wells to fill the water tanks again. It was a slow, tedious, and costly operation, but the only practical way to do it.

There were also problems of communications. For several weeks the tool pusher had to drive the 93 miles into Deming early each morning to file his drilling reports. Later, a radio communication system was set up so that information can now be transmitted from the site to Lordsburg, New Mexico, where telephone facilities are available.

The remoteness of the location adds tremendously to the costs of cementing, logging, and other routine well services. In some instances, service trucks have to remain at the site for days because it takes too long to get them out there when needed.

Maybe this lonesome wildcat will find oil, but most of them don't. If it is a dry hole, only the readers of this brief article and a handful of oil men will ever know of the tremendous amount of money, time, work, and worry that went into it.

Cat Cracker No. 3 Goes on Stream



Cat Cracker No. 3

Humble's new Fluid Catalyst Cracking Unit No. 3 went on stream recently at Baytown Refinery after nearly one and one-half years in the building.

The 265-foot giant has the capacity to handle about 55,000 barrels of gas oils daily and operates as part of the Cracking and Polymerization group. It works in conjunction with the two existing units at the refinery, Cat Crackers Nos. 1 and 2.

The new unit, tallest in the Refinery, makes components used for the manufacture of Butyl rubber, butadiene, aviation gasoline, and high octane motor fuels. It also replaces some obsolete equipment and provides for better utilization of available raw stocks.

Resolution Honors J. A. Neath

A resolution honoring the late J. A. Neath was adopted by the Texas Mid-Continent Oil & Gas Association at its annual meeting October 7. Mr. Neath, who was chairman of Humble's board of directors at the time of his death on November 16, 1957, was also a member of the board of directors and executive committee of the Association.

The resolution paid tribute to Mr. Neath as "the highest type of pioneer oilman, the kind who made this industry great. He was a source of inspiration to all of us . . . The Association and the industry have suffered an irreplaceable loss in the passing of this great American who was loved by all."

Reistle Heads Fund Committee

Carl E. Reistle, Jr., executive vice president of Humble Oil & Refining Company, has been named national chairman of the Petroleum Industry Building Fund Committee for the United Engineering Center building program in New York City.

The petroleum committee is part of the overall plan for contributions by 16 participating engineering societies which will have headquarters in the new center to be built opposite the United Nations Building.

Included in the 16 societies which will take part in the drive to raise $8,000,000 are the five major engineering societies and 11 associated societies. The overall building will cost $10,000,000. Present plans call for the occupancy of the 20-story building in the fall of 1969.

Polypropylene Plant Planned for Baytown

Humble has announced that it will build a polypropylene plant at the Baytown Refinery. The plant, expected to be in operation late in 1959, is being designed with an initial capacity of 40 million pounds a year which can be expanded to 100 million pounds annually.

Polypropylene, a relative newcomer to the plastics field, is made from refinery gases. It is strong and sparkling clear, with a high resistance to heat and many chemicals and solvents. Among the uses to which it is well suited is the manufacture of plastic bottles, food containers, product packages, plastic pipe, and upholstery fabrics.

Millsapps New Humble Secretary

Paul Millsapps has been named secretary of Humble Oil & Refining Company, succeeding Henry K. Arnold who retired August 22.

Mr. Millsapps, formerly an assistant secretary and assistant treasurer, has more than 38 years' service with Humble. He served as assistant cashier and cashier before being named assistant treasurer in 1936 and assistant secretary in 1941. He retains the office of assistant treasurer in addition to the duties of secretary.

Mr. Arnold, before his retirement, accumulated more than 40 years of service. He came to work for the Company as executive secretary on April 1, 1918. In 1941, he was made secretary and assistant treasurer of the Company. He also was manager of the Treasury Department.

In other changes in the Treasury Department, I. D. Breedlove and L. W. Groce were elected assistant secretaries in addition to their offices as assistant treasurers.

Paul Millsapps

Henry K. Arnold

J. O. Edwards

J. R. Mulvey

Haylett O'Neill, Jr.

F. T. Fendley

Edwards Named Assistant Controller

J. O. Edwards has been elected assistant controller of Humble Oil & Refining Company, succeeding J. R. Mulvey who retired after more than 40 years' service.

Before his promotion Mr. Edwards was assistant to the controller. During his 12 years of service with Humble, he also has served as head of the Methods and Procedures Review Staff, assistant chief accountant of the production and exploration accounting office, general auditor, and chief accountant of production and exploration accounting office.

Mr. Mulvey joined Humble in 1918 as the first clerk employed in the then newly organized Sales Department. In 1925, he became chief clerk in sales accounting and between 1929 and 1932 was a special assistant to the sales manager. He served as chief accountant of the sales accounting office from 1932 to 1942, when he was elected assistant controller. In 1953, Mr. Mulvey was designated senior assistant controller, a post he held until he retired.

O'Neill Named Purchasing Agent

Haylett O'Neill, Jr. has been named purchasing agent for Humble Oil & Refining Company, succeeding F. T. Fendley who retired October 17.

Before his promotion, Mr. O'Neill held the position of assistant purchasing agent. During his 24 years' service with Humble, he also served as a roustabout, roughneck, drilling mud engineer, petroleum engineer, and assistant buyer.

Mr. Fendley, who retired after more than 39 years' service, came to work for Humble as an engineer at Baytown Refinery in 1919. In subsequent years he served as an assistant buyer, buyer purchasing agent, and acting purchasing agent before being appointed purchasing agent in 1945.

Forty Years With Humble

Donald F. Haynes, manager of the Crude Oil Department, completed 40 years of service with Humble on September 9.

Deaths

Employees: Wharton Bowers, 49, utility man in the Garage at Houston, on September 9; William E. Dunn, 55, shift supervisor at Baytown Refinery, on August 19; Roswell S. Epperson, 54, seismic party chief in Geophysics-Exploration in Texas, on August 13; Jewell M. Holmes, 46, electrician at Grand Isle, on August 20; Ernest L. Hubbard, 57, operator at Baytown Refinery, on July 29; George E. Kaase, 60, intermediate accountant in the Houston Office, on July 31; Holloway J. Martin, 55, pipeliner at Mexia District, on August 1; Amado Martinez, 56, assistant cook in the Dining Room in the Houston Office, on August 19.

Maston Murphy, 48, district clerk in the Pipe Line Office in Refugio District, on July 11; Felix A. Raymer, 58, lawyer in the Law Department in Houston, on July 30; Ray T. Smith, 59, section head in Accounting Service at Baytown Refinery, on September 6; Thomas E. Stevens, 59, assistant district gauger, Humble Pipe Line, Longview District, on September 9; Hoyett Taylor, 52, pipe fitter first at Baytown Refinery, on August 4; S. Dorsett Turner, 57, farm boss at Raccoon Bend, on September 1.

Annuitants: John C. Arvin, 65, former district chief clerk at Willamar, on August 16; Kenneth P. Black, 61, former engineer at Satsuma Station, on June 28; Augustus L. Buller, 71, former follow-up clerk in Purchasing in the Houston Office, on August 21; Charles K. Beauchamp, Sr., 65, former assistant wire chief, Humble Pipe Line, Houston Office, on July 17; Thomas E. Counts 73, former line rider-walker at Cisco District, on July 25; Cayetano De Hoyes, 68, former laborer special at Baytown Refinery, on September 8.

George G. Edwards, 71, former pipe fitter first at Baytown Refinery, on August 7; Arthur J. Everett, 59, former chief operator at Baytown Refinery, on September 4; Alfred L. Giroir, 79, former car repairman first at Baytown Refinery, on August 16.

Charles H. Harden, 74, former gas plant repairman at East Texas Gas Plant, on August 4; Samuel E. Herring, 60, former pipe fitter first at Baytown Refinery, on September 4; James I. Houston, 71, former chief rate clerk in the Traffic Bureau in the Houston Office, on July 17; Joseph A. Killingsworth, 78, former pipeliner at Webster Station, on July 23; Willie Mathews, 80, former laborer at Baytown Refinery, on July 14; Turner A. Miller, 73, former janitor in the Houston Office, on July 14; August M. Pelly, 57, former rigger first at Baytown Refinery, on August 17; Author F. Teal, 77, former oiler at Webster Station, on August 20.

Recent Retirements

HUMBLE PIPE LINE COMPANY

Name	Location	Date of Retirement	Years of Service
James P. Allen	Hearne Station	August 1	31
Walter L. Anders	Tomball	June 30	32
Willie M. Arrington	Truscott Station	September 24	24
Fred Ashford, Sr.	Longview Station	August 1	38
Emmett J. Backloupe	Mexia District	August 1	33
Raymond O. Bankhead	Pendell Station	August 1	29
Newt A. Barker	Childress Station	August 1	30
George D. Bishop	Odessa District	August 1	31
Edward E. Blume	Lytle	September 6	37
Joseph T. Blythe	Mexia District	August 1	38
Alvis E. Butler	Bateman Station	August 1	35
Frank W. Bugg	McCamey District	August 1	31
Lemuel E. Clement	Big Lake	August 1	32
George R. Cook	Hawley Station	August 1	25
Jessie E. Cox	Talco Station	August 1	34
Raymond A. Dahl	Odessa District	August 1	27
Rayburn R. Darden	Corpus Christi Office	August 1	33
Wesley C. Darnell	Tomball District	August 1	35
Lester R. Day	Alan Reed Station	August 1	21
Robert S. Denman	Hearne Station	August 1	31
George P. Donnell	London District	August 1	37
William H. Dyer	Bateman Station	August 1	37
Arthur Dyson	Talco District	August 1	36
Joe C. Eakin	Bateman Station	August 1	32
William E. England	Hawkins	August 1	33
John M. Felder	Alice District	July 7	32
Hugh J. Felts	Webster Station	July 1	33
Thomas U. Felts	Webster Station	August 1	32
Roy E. Filler	Tomball	July 24	29
Sterling Fisher	New Quintana Station	August 1	21
Dave S. Floyd	Mexia District	August 1	33
Arthur Freeman	McCamey	July 1	31
Bevily Gartman	Talco Station	August 1	34
Lonnie L. Gipson	Hawkins	August 1	30
Lloyd L. Glanton	Mexia District	August 1	31
Guy Griggs	Pierce Junction	July 1	35
Ernest F. Gunn	Groesbeck Station	August 1	26
Emmett W. Hale	Refugio	August 1	30
Dewitt W. Hamilton	Gladewater District	August 1	35
Harry W. Harlan	Alan Reed Station	August 1	33
Virgil D. Herring	Mexia	September 17	19
James G. Herrington	Crane Station	August 1	28
Thomas H. Hicks	Webster Station	August 1	31
Andrew B. Hord	Pierce Junction	August 1	32
Floyd T. Howard	Alice District	August 1	31
Everett Hughes	Anahuac District	August 1	32
Bob W. Johnson	Webster Station	August 1	32
Willie Jorden	Pierce Junction	August 1	36
John D. Kellum	Hearne Station	August 1	34
Dale L. Kimball	Odessa District	September 20	29
William Landrum	Ft. McKavett	August 1	36
Curtis A. Langford	Pierce Junction	August 1	33
Oscar P. Langseth	Hearne Station	August 1	31
Clarence B. Lee	McCamey District	August 1	38
Joe Lenormand	Anahuac District	August 1	36
Ralph E. Leslie	Hearne Station	August 1	37
Thomas Lindstrom	Longview District	August 1	38
Pete Lockard	Baytown	August 1	32
Charlie M. Martin	Odessa District	August 1	28
Clarence J. McBride	Tomball	August 1	33
Henry V. McCorkle	Pampa District	July 28	38
Zack McEntyre	London	August 1	31
Melton M. McNair	Hearne Station	August 1	31
James W. McQuaid	Hawkins District	September 2	28
Carroll Michael	Cisco District	August 1	24
William W. Milner	Putnam Station	August 1	37
Ira M. Myers	Hearne Station	August 1	31
Travis H. Neeley	Hearne Station	August 1	37
Andreas J. Nelson	McCamey District	August 1	33
Carl M. Nicol	East Texas Division	August 1	35
David M. Norman	Hearne Station	August 1	24
Drew Pitts	Baytown	August 23	31
Louie E. Prew	Odessa District	August 1	36
Robert L. Pyland	Alice District	July 7	31
Joseph P. Rains	Hawkins	August 1	34
John A. Reagan	Satsuma District	July 20	34
Travis S. Richardson	Longview	August 1	27
Emmitt W. Riddle	Hearne Station	August 1	32
John C. Roberts	Tomball	August 1	35
Cecil A. Russell	Anahuac District	August 1	31
Charles W. Salmon	Satsuma Station	September 27	31
Kelley C. Salyer	London	August 1	32
Charles N. Sawyer	Ingleside Station	August 1	30
Fred Schroeder	Baytown	August 1	27
Taylor A. Sherrill	Odessa District	August 1	30
Titia B. Simmons	Cisco Division Office	August 1	32
Thomas D. Smith	Gladewater Station	August 1	33
James C. Stewart	Talco Station	August 1	37
Marcus H. Stewart	Gladewater Station	August 1	38
William E. Stringfellow	Mexia	August 1	25
Ernest M. Stubbs	Hearne Station	July 1	33
John J. Stumpf	Pierce Junction District	August 20	31
Clarence F. Sumrow	Longview Station	August 1	26
Otto Tackett	Ingleside Station	August 1	25
Odie L. Taylor	North Texas Division	August 1	38
Oda L. Todd	Longview Station	August 1	34
Moye D. Vansau	Longview Station	August 1	34
Ephfram A. Walding	Harbor Island	August 1	29
Doyle C. Walker	Ingleside Station	August 1	31
Joseph T. Whitworth	Webster Station	August 1	33
David W. Wickman	Longview	August 1	26
Ray C. Williams	Baytown	July 29	36
Floyd D. Williamson	Alice District	August 1	30
John H. Wilson, Jr.	Hearne Connection	August 1	27
Eugene D. Woodfin	Pierce Junction	July 1	36

PRODUCTION DEPARTMENT

Turner J. Alexander	Andrews District	August 1	32
Joseph S. Allaire	Hawkins District	August 17	35
George N. Anderson, Sr.	Talco District	July 28	35
Fletcher L. Arnold	Friendswood District	July 27	34
Thelma K. Bailey	Bayou Sale District	August 1	25
Frank G. Bailey	Hawkins District	August 1	29
Felix J. Barbe	North Crowley District	August 1	28
Jesse M. Beard	Gladewater District	August 1	35
Richard J. Beck	Vernon District	August 1	26
Oscar C. Becker	Hawkins District	August 1	35
George L. Bonner	London	August 1	29
Squire C. Brandeberry	Imogene District	July 8	38
John C. Brooks	Anahuac	September 22	35
Louis E. Cezeaux	Pampa District	August 1	29
Wilbur L. Cleveland	Ganado District	August 1	34
Townsend Cobb	London	August 1	29
Robert M. Cox	Goose Creek District	July 1	34

Name	Location	Date of Retirement	Years of Service
Ewell L. Cutbirth	Goose Creek District	August 1	36
Everett H. Davis	Beaumont District	August 1	31
Jasper C. Dewees	Imogene District	September 10	28
Mark B. Donnell	Eastern Division Office	August 1	37
Clarence C. Donohue	Talco District	August 1	38
Leroy E. Douglas	Conroe District	August 1	34
Custer C. Emde	East Texas Gas Plants	August 1	35
Corbit C. Fairbanks	Laurel District	August 1	30
John C. Fant	Raccoon Bend	August 31	34
William W. Finch	Goose Creek District	June 11	33
Lee Roy Fordtran	Pampa District	August 1	29
Oscar L. Fuhr	Talco District	August 22	24
Burley Gill	Ganado District	August 1	34
John C. Gill	Laurel District	August 1	35
Robert M. Gillette	Hobbs District	August 1	36
Jack L. Graham	London District	August 1	32
Calvin L. Grant	Goose Creek District	July 19	35
Clarence P. Guedry	Grand Isle	August 1	26
Wilson Guytine	London District	July 1	29
Luther H. Hare	Hawkins District	August 1	33
Robert L. Harrell	Gladewater	August 27	32
Overton Havard	North Crowley District	August 1	29
Russell D. Hewlett	Flour Bluff	July 1	29
Sallie R. Holland	N. Texas Division	September 29	38
William L. Hooks	Liberty District	August 1	29
Willie G. Ingram	Winters District	August 1	34
Claude W. Jolly	London District	August 1	34
Asbury F. Jones	Ganado District	August 1	33
William E. Jordan	Pampa District	August 1	35
Buck Kimble	Ganado District	August 1	30
Fredrick C. Lovett	Tomball District	July 29	29
Earl M. Mackey	Pledger Gas Plant	September 30	2
Frank M. McCarty	Port Sulphur District	August 1	30
Bert A. McDonald	Grand Isle District	August 20	27
Curtis K. Mercer	East Texas Gas Plant	August 1	33
George D. Messimer	Stratton District	August 1	34
Arthur L. Moore	Eastern Division	August 10	36
Solomon Morgan	Avery Island	August 1	29
Ralph E. Mortland	Government Wells	August 1	23
James L. Mowery	Flour Bluff	September 5	38
Claude E. Pimlott	North Texas Division	August 1	37
Lem P. Polk	Flour Bluff	June 24	29
William C. Pressley	Conroe District	July 17	25
Leslie H. Reuwer	Beaumont District	August 18	25
Lincoln H. Riley	McCamey District	August 1	38
Rudolph W. Roach	Government Wells	August 1	35
Bennie R. Rodgers	Hawkins	August 1	31
James L. Rollins	Talco	August 1	37
Abel M. Rossi	Goose Creek District	June 1	38
David Seibold	McCamey District	August 1	33
Keith Carol Shawver	Goose Creek District	August 1	30
Jack Vernon Silva	Goose Creek District	July 7	30
Bryan F. Simpson	Gladewater District	August 1	36
Travis L. Smith	Tomball District	June 17	32
Homer C. Snider	Liberty District	August 1	33
Don D. Spencer	Greta District	July 1	30
John C. Stovall	Wink District	August 1	32
Clennen G. Swank	Conroe District	September 4	30
Robert N. Taliaferro	Odessa District	July 16	25
Thomas C. Tanksley	Paradis District	August 1	38
John W. Trantham	Athens District	August 1	29
Robert Turner, Sr.	Imogene District	August 25	29
Reuben J. Via, Sr.	Imogene District	July 30	28
Alvin E. Wappler	Ganado District	August 1	33
Coleman C. Warner	Hobbs District	August 1	33
Luther T. Weeks	Ganado District	August 1	36
Wyatt L. Wilburn	Goose Creek District	August 1	38
Groves C. Wright	Hawkins District	August 1	34

BAYTOWN REFINERY

Cullen T. Abbott	Pumping & Gauging Dept.	August 1	29
Ernest G. Adlong	Operations General	August 1	37
Clayton C. Andrus	Process General	August 1	37
Eli D. Ashworth	Lube Extraction Dept.	August 1	28
Frank Austin	Garage Department	August 1	22
Willie L. Atwood	Yield Department	August 1	32
Francis A. Baker	Inspection Laboratory	August 1	30
Richard L. Baker	Docks Department	August 1	33
Hilario Barajas	Service Laboratory	August 1	31
Lawson R. Bargainer	Pumping & Gauging Dept.	August 1	36
Joseph R. Barrow	Cracking Coils	August 1	24
Vernon L. Berry	Compound Department	July 1	33
Nathaniel F. Blanscet	Butyl Plant	August 1	33
Marvin R. Bobbitt	Butyl Plant	August 1	33
Ben C. Bonner	Pipe Department	August 1	33
Hubert Braziel	Rigging Department	August 1	28
Jessie E. Brooks	Utilities Department	August 1	33
Bernice E. Brewer	Butyl Plant	August 1	33
Collier M. Brewer	Boilermaker	August 1	37
John Broussard	Labor Department	August 1	27
Richard Brown	Distillation Dept.	August 1	36
Howard J. Bryant	Mechanical General	August 1	34
Ralph H. Burton	Machinist Department	August 1	35
Edwin A. Bynum, Jr.	Maintenance & Construction	July 31	38
Alfred L. Capps	Mechanical General	August 1	29
Nugent O. Carnes	Mechanical General	August 1	35
Arnett H. Carroll	Distillation Dept.	August 1	30
Vertner W. Carson	Light Ends Department	August 1	37
James O. Casey	Employee Relations	July 1	23
Joseph J. Casey	Butyl Plant	August 1	30
Oscar Cherry	Pipe Department	August 1	29
Johnnie F. Christian	Pumping & Gauging	August 1	30
Hardy J. Clay	Labor Department	August 1	32
Virgil Cooper	Machinist Department	August 1	32
Ogle Monroe Craig	Electric Department	August 1	28
Perry M. Crenshaw	Garage	August 1	32
Ernest P. Crow	Boilermakers Dept.	August 1	37
Norman B. Culver	Medical Department	August 1	38
Greenville M. Cunningham	Fire Equipment Dept.	August 1	35

Name	Location	Date of Retirement	Years of Service
George E. Dabney	Light Ends Department	August 1	34
George Davis	Labor Department	August 1	32
Willie J. DeBruhl	Treating Department	August 1	32
Carroll M. Dennison	Butyl Plant	August 1	34
Wilbur E. Domangue	Welding Department	August 1	22
Minor L. Doss	Cracking & Polymerization	June 25	34
Joseph M. Douglas	Extraction Plants	August 1	39
Hampton C. Durham	Railroad Department	August 1	33
Wilbert E. Engleman	Machinist Department	August 1	29
Edward V. Erxleben	Operations General	August 1	35
Otis L. Ewing	Instrument Department	August 1	33
Christopher Fay	Light Ends Department	August 1	32
Jack Ford	Pipe Department	August 1	35
William H. Ford	Service Laboratory	August 1	32
Jesse W. Fudge	Pipe Department	August 1	30
Matias Galvan	Medical Department	August 1	38
Oscar D. Gibson	Contact Lube Unit	August 1	32
Garlen E. Gieger	Oil Straining & Blending	August 1	33
Oswaldt Girndt	Mechanical General	August 1	36
Alfred D. Godwin	Employee Relations	August 11	15
Jeremiah C. Green	Pumping & Gauging	August 1	33
Otho J. Gregory	Pumping & Gauging	August 1	30
Branch Guillett	Mechanical General	August 1	38
Elgie E. Haltom	Light Ends Department	August 1	37
Fred C. Hans	Rigging Department	August 1	30
Ulysses S. Harris	Machinist Department	August 1	22
Dial B. Haynie	Machinist Department	August 1	15
Carl Dewey Hebel	Light Ends Department	August 1	32
Percy W. Hebel	Distillation Department	August 1	37
Joseph F. Heintschel	Pipe Department	August 1	36
Juan Hernandez	Contact Lube Plant	August 1	37
Richard B. Herring	Fire Equipment Dept.	August 1	31
Hilary A. Herrington	Butyl Plant	August 1	29
Joseph C. Hoffpauir	Electric Department	August 1	30
Edgar L. Holder	Butyl Plant	August 1	30
William B. Hollingshead	Electric Department	September 2	32
Clifton Holmes	Compound Department	August 1	34
George H. Horn	Brickmason Department	August 1	38
Joseph G. Hudgins	Garage Department	August 1	28
Renly L. Huddleston	Pumping & Gauging	August 1	31
Wayne S. Hughes	Blending Department	August 1	38
Floyd E. Humburg	Cracking & Polymerization	August 1	32
Ted Hunt	Machinist Department	August 1	33
Edward C. Huron	Welding Department	August 1	32
William T. Jasper	Plant Protection	July 1	15
Marshall A. Jenkins	Machinist Department	September 15	21
Frederick Jeter	Labor Department	August 1	34
Harry L. Karkowski	Accounting Department	August 1	38
Leonard Keller	Plant Protection	August 1	38
Charles F. Kelley	Mechanical Division	August 1	35
Frank E. Kelly	Insulation Department	August 1	36
Albert L. Kennedy	Distillation Dept.	July 1	35
Virgil A. Kirkpatrick	Distillation Dept.	August 1	34
Ira L. King	Boilermaker Dept.	August 1	23
Isaac R. King	Utilities Department	August 1	31
Taft J. Konecny	Alkylation Plant	August 1	29
Collis H. Lancaster	Fire Equipment Dept.	August 1	28
Ben L. Lansford, Sr.	Mechanical Supervisor	August 1	34
Ernest H. Lee	Butadiene Plant	August 1	30
Anton Leibham	Rigging Department	August 1	37
Peter Leibham	Boilermaker Dept.	August 1	15
Andrew A. Leslie	Utilities Department	August 1	30
Frank A. Lierman	Thermal Polymerization	August 1	23
William A. Lovett	Plant Protection	August 1	20
John H. Macke	Butadiene Plant	August 17	39
Herman J. Mangham	Tube Cleaner Dept.	July 1	33
Percy L. Matthews	Pumping & Gauging	August 1	33
Laurian H. McClendon	Mechanical Department	August 1	35
Barrett T. McKinney	Dock Department	August 1	39
James C. McMurrough	Pumping & Gauging	August 1	32
Murphy M. McNulty	Brickmason Dept.	August 1	33
Ernest L. Miller	Distillation Dept.	August 1	30
Frederick E. Miller	Machinist Dept.	August 1	23
James H. Mize, Sr.	Electric Dept.	August 1	23
Robert E. Moak	Labor Department	July 1	28
Freddie E. Morris	Light Ends General	August 1	35
Edgar J. Mouton	Distillation Dept.	August 1	32
Willie F. Muller	Naptha Fractionating Unit	August 1	29
Cecil S. Nalley	Pipe Department	August 1	35
John R. Offerman	Propane Lube	August 1	24
Antonio Olvera	Brickmason Dept.	August 1	38
John Opryshek, Jr.	Treating Dept.	August 1	34
Robert L. Patterson	Engineering Maintenance	August 1	37
William C. Patterson	Labor Department	August 1	30
Frederick A. Palmer, Sr.	RHB Butyl Unit	August 1	37
John M. Pepper	Yield Department	August 1	34
John P. Phillips	Compound Dept.	August 15	21
Oran T. Pittman	Reclamation Dept.	August 1	34
Julius F. Plagens	Distillation Dept.	August 1	36
James D. Poskey	Treating Dept.	August 1	28
Harold D. Powell	Treating Dept.	August 1	22
Thomas Jefferson Pruett	Employee Relations	August 1	38
Eunice C. Rhoden	Pipe Department	August 1	33
Cruz A. Rocha	Labor Department	August 1	38
Sotero Salinas	Brickmason Dept.	August 1	35
Mike Schiraldi	Pipe Department	August 1	21
John C. Schmadl	Pipe Department	August 1	28

Name	Location	Date of Retirement	Years of Service
James E. Seale	Benzine Unit	September 22	37
Earl H. Seeley	Treating Dept.	August 1	33
John C. Settle	Blacksmith Dept.	August 1	32
Ollen Simmons	Absorption Plant	August 1	29
Joe Sirocka	Insulation Dept.	July 1	18
Albert Skidmore	Labor Department	August 11	15
George R. Skinner	Treaters Dept.	July 1	31
Elmer E. Slagle	Butadiene Plant	August 1	37
Claude W. Smalling	Benzine Unit	August 25	30
Clarence E. Smith	Cracking & Polymerization	August 1	32
Cecil V. Smith	Engineering Maintenance	September 1	34
John C. Smith	Sheet Metal Dept.	August 1	32
John E. Snyder	SO 2 Plant #1	August 1	25
Ellis E. Stagner	Dehydrogenation Unit	August 1	19
Arthur V. Staner	Butadiene Unit	July 1	30
Jesse H. Stone	Pipe Department	August 1	30
Payton B. Stone	Rigging Dept.	August 1	31
Bruce G. Stong	Service Laboratory	August 1	30
Harry A. Thomas	Lube Plant	August 1	32
Frank B. Threadgill	Welding Dept.	August 1	30
Alvin H. Tillman	Pipe Department	August 1	29
Jesse M. Trahin	Cracking & Polymerization	August 1	33
George A. Trotter	Pipe Department	September 1	15
Mary L. Wall	Engineer Design Department	June 18	15
Dewey M. Waltman	Operations General	July 1	32
Thomas O. Waldrep	Blacksmith Dept.	August 1	31
John E. Walker	Machinist Dept.	August 1	29
Phillip A. Walker	Machinist Dept.	August 1	15
Barney L. Ward	Labor Department	August 1	41
William J. Wells	Accounting Dept.	July 9	39
Daniel B. Whatley	Dock Department	August 1	28
Alfred J. White, Jr.	Garage Dept.	August 1	21
Loyal C. White	IHB Butyl Unit	August 1	30
Raeford F. White	Treating Dept.	August 1	37
Charlie H. Whitmire	Pipe Department	August 1	15
Mehemet Wiggen	Technical Service	August 1	37
Jim Williams	Labor Department	August 1	37
William H. Williams	Pipe Department	July 22	33
Calvin L. Woods	Process Extra Board	August 1	21
Arthur G. Woods	Pumping & Gauging	August 1	31
Rupert C. Wright	Butadiene Utilities	August 1	32
James R. Young	Garage Dept.	August 1	31

EXPLORATION DEPARTMENT

William B. Hoover	North Texas Expl. Geol.	August 1	32

MARKETING DEPARTMENT

Herbert W. Eschenburg	Southwest Texas	August 1	24
Fred L. Faust	Marketing NE-Div. Office	August 1	35
Edgar F. Lang	Luling Bulk Station	August 1	25
Walter L. Vest	Pearsall Bulk Plant	August 1	24

HOUSTON OFFICE

Henry K. Arnold	Treasury & Secretary's Ofc.	August 23	40
Olin G. Bell	Exploration General	August 26	33
Glen T. Bowden	PL-Southern Div. Office	August 1	31
Robert R. Blanar	Prod. & Expl. Accounting	August 1	38
Julian S. Burrows	Marine Dept.	August 1	38
Jean H. Busselle	Prod. & Expl. Accounting	August 1	34
Lomis Eckman	Prod. & Expl. Accounting	September 30	38
Frederick E. Erdman	Refining Acctg.	August 1	31
Sam Fruia	Garage	August 1	36
Amelia A. Godwin	PL-Communications	August 6	31
Leonard C. Hardcastle	PL-Technical Department	August 1	36
Agnes N. Hartley	General Services	August 1	22
William H. Hoffman	Civil Engineering Div.	August 1	32
Bessie F. Hollins	General Services	September 9	31
Samuel H. Hutchison	Lease Records & Rentals	August 1	36
Roy K. Jack	Garage	August 1	30
Donald E. Knighton	Lease Records & Rentals	August 1	34
Andrew R. Kuhn	Stationery, Printing & Reproduction	August 18	33
Edward A. Lamb	Refining Accounting	August 1	35
Clarence F. Leonard	Administrative Accounting	August 1	39
John S. Leonard	Prod. & Expl. Accounting	August 1	38
Earl N. Lewis	Refining Dept.	August 1	37
Henry Lollar	General Services	August 1	33
Charles F. McCabe	Crude Oil Operating	August 1	31
David H. McKinney	PL-General Office	August 1	36
John E. McKivett	Lease Records & Rentals	August 1	37
Gilman W. Mitchell	PL-Southern Div.	August 1	31
Howard B. Morris	Crude Oil Accounting	August 1	31
John R. Mulvey	Controller's Dept.	August 6	40
Joseph W. Newsome, Sr.	Production Operating	September 20	35
Cedric J. Newby	Geophysics Management	August 1	33
James A. Orr	Prod. & Expl. Accounting	August 1	38
James S. O'Connor, Sr.	Prod. & Expl. Accounting	August 1	30
Eugene Pollard	Garage	August 1	23
Walter A. Rachuig	PL-Technical Department	August 1	38
Walter P. Rice	PL-Operations	August 1	33
John W. Ridgeway	Prod. Operating	August 1	39
Frank R. Roche	General Services	September 1	26
Bertha C. Sands	General Services	August 1	20
Robert C. Scoggins	Lease Records & Rentals	September 1	24
Audrey W. Sheffield	Officers & Assistants	July 31	22
Frederick M. Stansbury	Manufacturing Accounting	August 1	38
John Lucy C. Stansbury	Manufacturing Accounting	August 18	31
Carlton B. Stults	Training Division	August 1	36
Donald W. Swope	Prod. & Expl. Accounting	August 1	38
Albert F. Wallace	Prod. & Expl. Accounting	August 1	39
Henry W. Watkins	Purchasing Dept.	August 15	30
Lester C. Whitson	Exploration Dept.	August 1	25
William F. Wilson	General Services	August 1	33

By the way

• Joe Adams, the veteran Humble scout who appears in the series of photos on pages 10-13, regaled writer Joe Tucker and photographer Tom Nowlin with numerous anecdotes about scouting work during the course of the picture-taking.

The tightest hole he ever saw, Mr. Adams said, was in East Texas during the early '30s. The crew had two tombstones set up near the rig, he recalled. On one of them was scrawled: "Here lies a man who asked for information," and on the other: "Here lies a man who gave information."

Undaunted, the scout struck up a conversation with the driller, and finally asked him how deep the well was. "We're deeper than Hades," the driller growled, ending the conversation abruptly.

As the scout was departing, the rig fireman called him aside. "How did you make out with the driller?" he asked. Mr. Adams told him what the driller had said. The fireman shook his head and, with a great show of secrecy, whispered: "Don't believe a word of it. I know for a fact we're not half that deep."

• J. F. Magee, toolpusher on the New Mexico wildcat described on page 17, doesn't have to drive the 93 miles from Deming to the well site as often as he used to. He now has a two-way radio in his car, and there is also radio equipment at the well. But the problem of communication is not so simply solved. Because of intervening mountains, radio signals from Deming can't reach the well site. Consequently, when Mr. Magee wants to call the location from Deming, he has to drive 20 miles west of town before his radio will work.

The third unit in this three-way radio communication system is located in the county court house at Lordsburg, New Mexico. There, the wife of the county jailer answers the radio calls and relays the messages to their destination by long distance telephone.

Our photographer visited the location before the radio communication system was set up, however, and the toolpusher was having to spend most of his time at the well site. Perhaps as a gesture of defiance to his desert surroundings, Mr. Magee was cultivating two rows of corn near the drilling rig. Like all avid gardeners, he wanted to show his "crop" to the photographer (see cut).

Toolpusher Magee cultivates his corn.

• On his recent trip to Alaska, photographer Mel Coston clicked a shutter on many a bear, but all from the vantage point of a helicopter. Briefly, though, it appeared that he might get a chance to snap a bruin from a somewhat more dramatic angle.

Coston was visiting the seismic operation shown on page 6 when a strained cry came drifting out of the woods. The voice was that of one of the crewmen who was back among the trees winding up a cable.

"Sounded like he said bear," someone said.

Several members of the crew, one carrying a rifle, hurried to see what the trouble was, Coston and his trusty camera hard on their heels. They found the man they were worried about calmly walking along, reeling in cable and singing in an operatic baritone.

"Looks like I'm going to have to do something about my voice," he said sheepishly. "Every time I start singing, somebody comes after me with a gun."

The Humble Way

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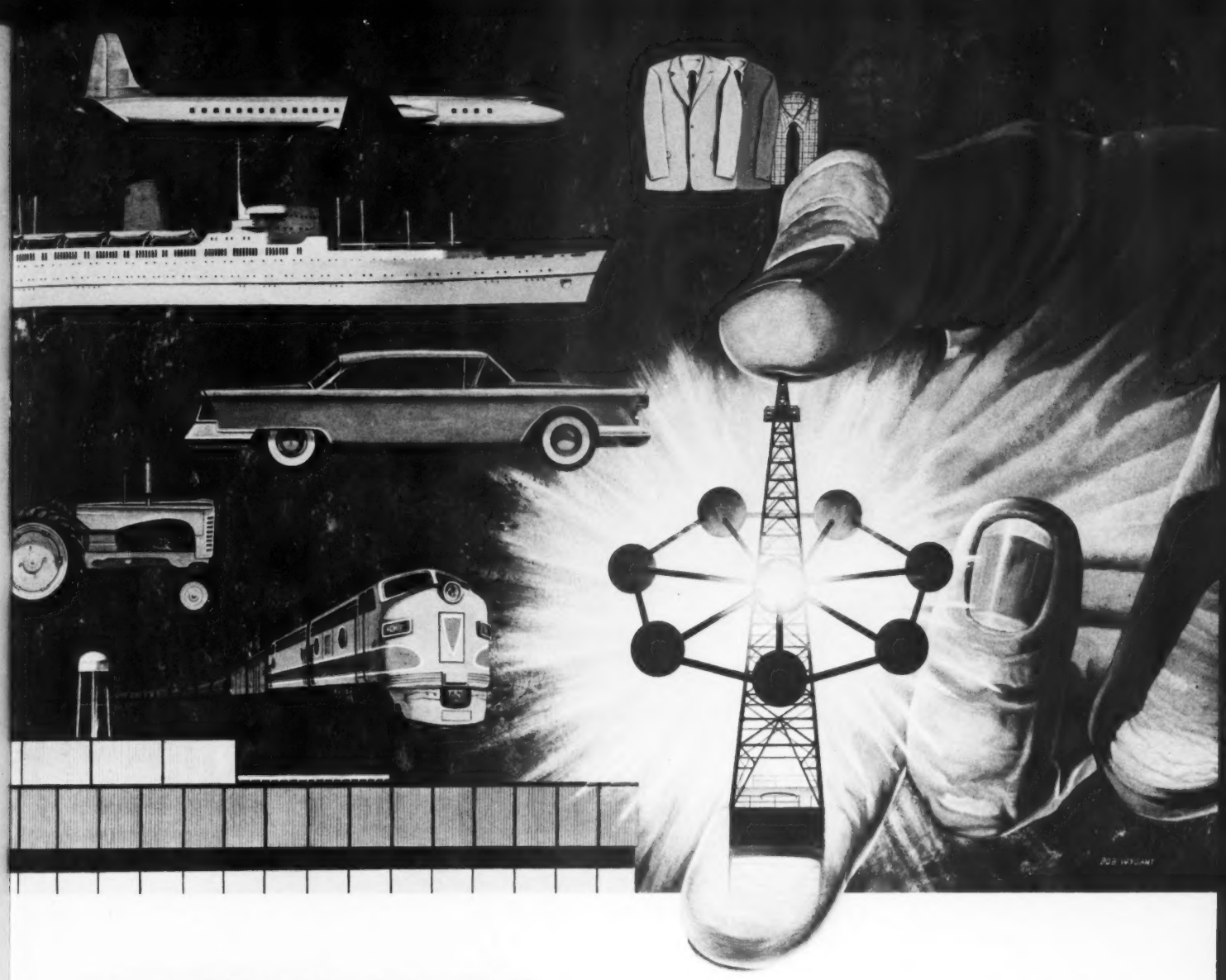

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Oil and natural gas have powered most of the great technological advances of modern times; petroleum hydrocarbons have transformed the dreams of inventors into the realities of engineers . . . Today, in the United States, oil and natural gas provide about 75% of the country's energy requirements; and large quantities of oil, available for production beyond immediate need, are necessary to the national security.

An obvious example is the gasoline that powers our automobiles; another is the diesel fuel burned by post-war railway engines. But do not overlook electric power plants, the airplane, whether jet or propeller driven, factory power plants, farm mechanization, and the revolution since World War II in home heating devices. Oil provides the energy that moves the trucks, airplanes, ships and tanks of our Armed Forces.

But petroleum as a source of energy is only part of the story. In the past two decades, the petrochemicals have supplied the country with a vigorous new industry: already most of our rubber is made from petrochemicals . . . the ubiquitous plastics derive from petroleum products . . . paraxylene, a petrochemical, is the raw material for one of the most useful of the new fabrics. In this area, wonders never cease; the petrochemicals contribute more each year to the efficiency, comfort, and convenience of modern living.

Thus, oil's progress has made other progress possible all along the front of American industry . . . Petroleum is the American resource that is basic to the needs of our time . . . that is essential to our national security.

★ ★ ★

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